

REMARKS

In the final Office Action dated September 17, 2002, claims 1-58 were rejected. In the present response, claims 1, 2, 33, 50, 57, and 58, have been amended. Claims 1-58 remain pending. Applicant acknowledges the withdraw of the obviousness-type double patenting rejection of claims 1-5, 7, 9, 11, 13-15, 17, 19, 21, 23, 25, 27, 31, 33, 34, 36, 38, 40, 42, 44, 46, 48, 50, 51-56, and 58; and the rejection of claims 1-58 under 35 U.S.C. § 103(e).

Applicants respectfully submit that no new matter has been added by way of the above amendments.

I. Claim Rejections Under 35 U.S.C. § 102(b)

(a) Claims 1, 2, 3, 11-18, 33, 42-49, 57, and 58

Claims 1, 2, 3, 11-18, 33, 42-49, 57, and 58 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,966,981, by Schultz (the '981 patent). The Examiner stated that:

The '981 patent teaches the use of liquid carbon dioxide for the removal of organic solvents including *inter alia* diethyl ether, ether alcohols such as ethylene glycol monomethyl and monoethyl ether, halogenated hydrocarbons such as chloroform, ethylene dichloride, perchloroethylene and the like.

Applicants respectfully traverse this rejection in light of the amended claims.

In order to anticipate a claim, the reference must contain each and every element of the claimed invention, arranged as in the claim. Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Company, 221 U.S.P.Q. 481 (Fed. Cir. 1984). Additionally, the reference must "sufficiently describe the claimed invention to have placed the public in possession of it."

Minnesota Mining & Mfg. Co. v. Johnson & Johnson Orthopedics, Inc., 976 F. 2d 1559, 1572, 24 U.S.P.Q.2d 1321, 1332 (Fed. Cir. 1992).

As the claims 1, 2, 3, 11-18, 33, 42-49, 57, and 58 now stands in front of the Patent Office, they claim, in one aspect, a process for cleaning substrates with an organic solvent in absence of liquid carbon dioxide; and removing the organic solvent from the substrates using a pressurized fluid solvent. The organic solvent of the present claimed invention is a glycol ether, and when the pressurized fluid solvent is liquid carbon dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

The '981 patent teaches a process of preparing a food product, such as agricultural products including cereal grains; cereal bran; cereal germ; fish meal; oilseeds such as soybeans, cottonseed, sesame seed, flaxseed, peanuts, copra, and the like, for food and feed use by separating the oil from the protein and carbohydrates prior to processing. (See, for example, the '981 patent, column 2, lines 54 to 56). The '981 patent states:

To prepare [agricultural] products for food and feed use, it is common to extract the oil with hexane or similar organic solvent.

The '981 patent, column 1, lines 17-19. The organic solvents taught in the process of the '981 patent include, organic solvents similar to hexane, including organic solvents having 1 to 6 carbons. Examples provided include:

[H]ydrocarbons such as propane, butane, pentane, and hexane; alcohols such as methanol, ethanol, propanol, isopropanol, butanol, pentanol, and hexanol; ketones such as acetone and methyl ethyl ketone; ethers such as diethyl ether; ether-alcohols such as ethylene glycol monomethyl and monoethyl ether; halogenated hydrocarbons such as chloroform, ethylene dichloride, perchloroethylene, and the like.

The '981 patent, column 2, lines 51 to 66. Additional organic solvent taught by the '981 patent include:

[L]ow molecular weight (i.e., containing 1 to 6 carbon atoms) such as methanol and aldehydes such as hexanal....

See the '981 patent, column 2, lines 34 to 36. In Examples 1 and 2, the organic solvent is hexane (Example 1), and methanol, ethanol, hexane, and hexanal (Experiment 2).

However, the '981 patent also does not teach a process for cleaning substrates by cleaning the substrates with an organic solvent in the absence of liquid carbon dioxide and when the pressurized fluid solvent is liquid carbon dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

As the '981 patent fails to disclose each and every element of the present claimed invention as arranged in the claims, anticipation cannot be found. Furthermore, the courts have stated that "we do not think that the general disclosure of [a reference] can be considered anticipatory of a specific limitation not disclosed merely because the general will include the specific." In re Jacobson 160 USPQ 795, 800 (CCPA 1969). Therefore, reconsideration and withdrawal of this 35 U.S.C. § 102(b) rejection of claims 1, 2, 3, 11-18, 33, 42-49, 57, and 58 is respectfully requested.

II. Rejections Under 35 U.S.C. § 103(a)

(a) Claims 2-32, 34-49, and 51-56

Claims 2-32, 34-49, and 51-56 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. 6,280,481 to Storey-Laubach *et al.* ('481) in view of *SPIE Micromachining and Microfabrication*, Oct. 1996, to Dyck, *et al.* ("Article"). The Examiner stated that:

The '481 patent discloses a process for cleaning substrates comprising: cleaning the substrate with an organic solvent; and removing the organic solvent from the substrates using a pressurized fluid solvent. The organic solvents are listed column 3, line 29, through column 6, line 9. What Applicant asserts is not

present, is an explicit teaching of cleaning the substrate in absence of liquid carbon dioxide. Article discloses cleaning with an organic solvent and then removing any solvent residue with carbon dioxide fluid. See e.g., the last paragraph of page 2.

The Examiner further stated:

Article discloses a process for cleaning substrates comprising: cleaning the substrate with an organic solvent, and removing the organic solvent from the substrates using a pressurized fluid solvent. Article discloses generally an organic solvent, to include ethers, see page 5 “Experimental” section. The artisan would have been motivated to select the instant combination for reason set forth explicitly in Article. Specifically, an attempt to remove any residual solvent that may still be contaminating the substrate.

Applicants respectfully traverse this rejection in light of the amended claim.

It is well established that the burden of establishing a *prima facie* case of obviousness lies with the Examiner. In determining obviousness, one must focus on the invention as a whole.

Symbol Technologies Inc. v. Opticon Inc., 19 USPQ 2d 1241, 1246 (Fed. Cir. 1991). The primary inquiry is: “Whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have had a reasonable likelihood of success....

Both the suggestion and the expectation of success must be found in the prior art, not the applicant’s disclosure.” In re Dow Chemical, 5 USPQ 2d 1531 (Fed. Cir. 1988). When all the prior art is considered together, a person having ordinary skill in the art must have a sufficient basis for the necessary predictability of success to sustain a rejection under 35 U.S.C § 103. See Ex parte Novitski 26 USPQ2d 1389 (Bd.Pat.App. & Int. 1993) Citing In re Clinton, 188 USPQ 365 (CCPA 1976).

In view of the amendments and remarks presented herein, Applicants respectfully submit that a *prima facie* case of obviousness has not been established. As taught by the present invention, in one aspect, Applicants' claim a process for cleaning substrates with an organic solvent in absence of liquid carbon dioxide; and removing the organic solvent from the substrates using a pressurized fluid solvent. The organic solvent of the present claimed invention is a glycol ether, and when the pressurized fluid solvent is liquid carbon dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

Article teaches a method of cleaning cantilevers and engines after oxide wet etching by first rinsing in deionized water followed by rinsing in pure methanol or acetone. Specifically, the Article teaches the use of supercritical carbon dioxide to dissolve and remove solvents from a pressure vessel: "Liquid CO₂ kept above the critical pressure (1073 psia) [is] used to dissolve and remove methanol (MeOH) from a pressure vessel containing micromachined structures." (See, Article, page 3, first full paragraph).

Because the parts to be cleaned in Article were extremely fragile and subject to damage upon direct removal of the solvent used in the second rinse, supercritical carbon dioxide was used to displace this solvent by metering supercritical carbon dioxide through the vessel. Afterwards, the supercritical carbon dioxide was removed from the vessel by slow purging.

The Article states that the use of supercritical carbon dioxide is used because "surface tension effects have needed to be eliminated" in micromachined structures. (See, Article, page 4, first full paragraph). Surface tension can result in "permanent adhesion between surfaces" of micromachined structures of a surface features come in contact with an adjacent feature or substrate. "Strong adhesive forces, referred to as stiction forces in micromechanics, can then

cause devices to remain permanently stuck leading to unacceptably low yields after devices have dried. (See, Article, page 1, first paragraph).

However, Article does not teach or suggest a method where when the pressurized fluid solvent is liquid carbon dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch. The Article specifically calling for supercritical carbon dioxide at above 1073 psia. The Article also specifically calls for a pure solvent such as MeOH or acetone, not a glycol ether of the present invention that comprises less than 50% by weight water.

The '481 patent teaches a method of dry-cleaning articles in carbon dioxide. The liquid dry-cleaning composition is a mixture of carbon dioxide, a surfactant, and a sizing agent, which are concurrently applied. An organic co-solvent is preferably included. The '481 patent also teaches that "by proper use of the co-solvent, conventional surfactants may be employed in a liquid carbon dioxide dry cleaning system. The purpose of the co-solvents in the '481 patent is to solubilize conventional surfactants so that they can be used in liquid carbon dioxide in which the cleaning takes place. (The '481 patent, column 2, lines 12-15). Furthermore, the '481 patent teaches that the dry cleaning composition is removed by simply draining or venting, not by extraction. (The '481 patent, column 6, lines 27-29).

In the present claimed invention, the substrates are cleaned with an organic solvent in the absence of liquid carbon dioxide. After the substrates have been cleaned, the organic solvent is drained and then extracted from the substrates by immersing the substrates in a pressurized fluid solvent, for example, liquid carbon dioxide, to extract the residual organic solvents from the substrates. Thus, the liquid carbon dioxide is used to remove the organic solvent from the substrate. Therefore, the '481 patent does not teach or suggest a method of cleaning substrates

with an organic solvent in absence of liquid carbon dioxide; nor when the pressurized fluid solvent is liquid carbon dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch. The '481 patent specifically calling for the use of conventional surfactants in a liquid carbon dioxide dry cleaning system.

Additionally, since the cited references do not teach all the elements of the present claimed invention, these references cannot properly be combined as the claimed invention can be distinguished over these cited references.

In the 35 U.S.C. § 103(a) rejection of the present claims, the Office Action has cited no pertinent reference showing or suggesting to one of ordinary skill in the art the interchangeability of substituents of the present claimed invention. It is also well established that the mere fact that it is possible to find isolated disclosures which might be combined in such a way to produce a new method does not necessarily render such invention obvious unless the art also contains something to suggest the desirability of the proposed combination. The hindsight afforded by the invention cannot be used to negate its insight.

The 35 U.S.C. § 103(a) rejection of claims 2-32, 34-49, and 51-56 is therefore improper. Reconsideration and withdrawal of this 35 U.S.C. § 103(a) rejection is requested.

(b) *Claims 1-58*

Claims 1-58 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *SPIE Micromachining and Microfabrication*, Oct. 1996, to Dyck, *et al.* ("Article") in view of U.S. 6,090,771 to Burt *et al.* The Examiner stated that:

Article discloses a process for cleaning substrates with an organic solvent; and removing the organic solvent from the substrates using a pressurized fluid solvent. Article discloses generally an organic solvent, to include methanol and acetone, see page 5 "Experimental" section. While methanol is disclosed as a solvent in Article, Article apparently fails to explicitly disclose the organic solvents contemplated by claims 2-58. Burt *et al.* (column 5, line 23, *et seq.*) discloses the claimed general structure and its

variants. The artisan would have been motivated to select the instantly claimed organic solvents for at least the reasons explicitly disclosed in Burt *et al.*, namely because there solvency characteristics (see, for example, column 4, line 40) and reduced residue and desirable drying characteristics (see, for example, column 5, line 55 *et seq.*)

Applicants respectfully traverse this rejection in light of the amended claim.

It is well established that the burden of establishing a *prima facie* case of obviousness lies with the Examiner. In determining obviousness, one must focus on the invention as a whole.

Symbol Technologies Inc. v. Opticon Inc., 19 USPQ 2d 1241, 1246 (Fed. Cir. 1991). The primary inquiry is: “Whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have had a reasonable likelihood of success.... Both the suggestion and the expectation of success must be found in the prior art, not the applicant’s disclosure.” In re Dow Chemical, 5 USPQ 2d 1531 (Fed. Cir. 1988). When all the prior art is considered together, a person having ordinary skill in the art must have a sufficient basis for the necessary predictability of success to sustain a rejection under 35 U.S.C § 103. See Ex parte Novitski 26 USPQ2d 1389 (Bd.Pat.App. & Int. 1993) Citing In re Clinton, 188 USPQ 365 (CCPA 1976).

In view of the amendments and remarks presented herein, Applicants respectfully submit that a *prima facie* case of obviousness has not been established. As taught by the present invention, in one aspect, Applicants’ claim a process for cleaning substrates with an organic solvent in absence of liquid carbon dioxide; and removing the organic solvent from the substrates using a pressurized fluid solvent. The organic solvent of the present claimed invention is a glycol ether, and when the pressurized fluid solvent is liquid carbon dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

Article teaches a method of cleaning cantilevers and engines after oxide wet etching by first rinsing in deionized water followed by rinsing in methanol and acetone. Specifically, the Article teaches the use of supercritical carbon dioxide to dissolve and remove solvents from a pressure vessel:

Liquid CO₂ kept above the critical pressure (1073 psia) was used to dissolve and remove methanol (MeOH) from a pressure vessel containing micromachined structures.

(See, Article, page 3, first full paragraph). Because the parts to be cleaned in Article were extremely fragile and subject to damage upon direct removal of the solvent used in the second rinse, supercritical carbon dioxide was used to displace this solvent by metering supercritical carbon dioxide through the vessel. Afterwards, the supercritical carbon dioxide was removed from the vessel by slow purging.

The Article states that the use of supercritical carbon dioxide is used because “surface tension effects have needed to be eliminated” in micromachined structures. (See, Article, page 4, first full paragraph). Surface tension can result in “permanent adhesion between surfaces” of micromachined structures of a surface features come in contact with an adjacent feature or substrate. “Strong adhesive forces, referred to as stiction forces in micromechanics, can then cause devices to remain permanently stuck leading to unacceptably low yields after devices have dried. (See, Article, page 1, first paragraph).

However, Article does not teach or suggest a method where when the pressurized fluid solvent is liquid carbon dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch. The Article specifically calling for supercritical carbon dioxide at above 1073 psia.

The ‘771 patent teaches an aqueous based cleaning/disinfecting composition that may include an organic solvent having a general structure of a glycol ether, but also containing at

least 83.7% by weight water. (The '771 patent, column 5, lines 23-30; column 11, line 12, to column 12, line 34). The composition is applied to a hard surface and then forms into a film upon, for example, wiping. The composition then is allowed to dry by evaporation. (The '771 patent, column 8, lines 16-62.

However, the '771 patent also does not teach or suggest a method of cleaning substrates with an organic solvent in absence of liquid carbon dioxide; and removing the organic solvent from the substrates using a pressurized fluid solvent. The organic solvent of the present claimed invention is a glycol ether, and when the pressurized fluid solvent is liquid carbon dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

Furthermore, in In re Lambooy (133 USPQ 270, 275 (CCPA 1962)), the court held that compounds embraced within the generic disclosure of prior art were NOT rendered obvious. Specifically, the CCPA stated:

It is true that appellant's compound is encompassed by the broad classes of compounds disclosed by these reference patents BUT SO ARE MANY MANY OTHER COMPOUNDS. We do not think that progress in the useful arts would be promoted by permitting broad theoretical disclosures as these to preclude appellant from obtaining a patent for his invention." (emphasis added).

In the present claimed invention, Applicants' contend that the disclosure of the generic glycol ether formula in column 5 of the '771 patent does not render the present claimed invention obvious.

Additionally, since the cited references do not teach all the elements of the present claimed invention, these references cannot properly be combined as the claimed invention can be

distinguished over these cited references. Furthermore, there is no motivation or suggestion to combine the cited references. The Office Action states, however, that:

The artisan would have been motivated to select the instantly claimed organic solvents for at least the reasons explicitly disclosed in Burt *et al.*, namely because of their solvency characteristics (see, for example, column 4, line 40) and reduces residue and desirable drying characteristics (see, for example, column 5, lines 55 *et seq.*).

But the Office Action does not cite any reference showing or suggesting the interchangeability of such compounds or methods.

In making this allegation of interchangeability, the Office Action is attempting to shift the burden of proof of unobviousness to the Applicants. In the case of In re Grabiak (226 USPQ 870, 872 (CAFC 1985), the Court of Appeals for the Federal Circuit held that the USPTO's rejection of claims toward a herbicide antidote invention was improper because the USPTO cited no pertinent reference showing or suggesting to one of ordinary skill in the art the interchangeability of a thioester for an ester group in the herbicide antidote invention.

In the 35 U.S.C. § 103(a) rejection of the present claims, the Office Action has cited no pertinent reference showing or suggesting to one of ordinary skill in the art the interchangeability of substituents of the present claimed invention. It is also well established that the mere fact that it is possible to find isolated disclosures which might be combined in such a way to produce a new method does not necessarily render such invention obvious unless the art also contains something to suggest the desirability of the proposed combination. The hindsight afforded by the invention cannot be used to negate its insight.

The 35 U.S.C. § 103(a) rejection of claims 2-58 is therefore improper. Reconsideration and withdrawal of this 35 U.S.C. § 103(a) rejection is requested.

CONCLUSION

With entry of the above Amendment and in view of the foregoing remarks, it is respectfully submitted that claims 1-58 are in condition for allowance.

None of Applicants' amendments or cancellations are to be construed as dedicating any such subject matter to the public, and Applicants reserve all rights to pursue any such subject matter in this or a related patent application.

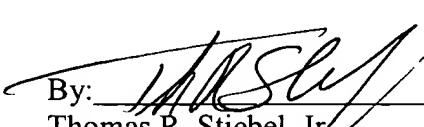
Submitted below is separate page titled "Version with Marking to Show Changes Made to the Claims," showing a marked-up copy of prior pending claims.

It is respectfully submitted in view of the foregoing Amendments and Remarks that all of the objections and rejections in the final Office Action dated September 17, 2002 have been overcome and should be withdrawn. Applicants respectfully request early and favorable notification to that effect.

If, in the opinion of the Examiner, a phone call may help to expedite prosecution of this application, the Examiner is invited to call Applicant's undersigned attorney at (312) 701-8775.

Respectfully submitted,

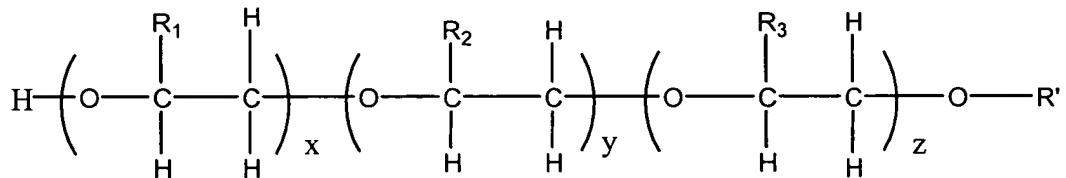
Dated: December 23, 2002

By: 
Thomas R. Stiebel, Jr.
Attorney for Applicants
Registration No. 48,682
MAYER, BROWN, ROWE & MAW

MAYER, BROWN, ROWE & MAW
P.O. Box 2828
Chicago, IL 60609-2828
(312) 701-8775

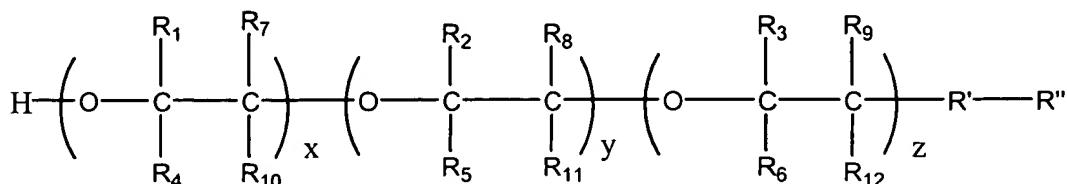
Version with Marking to Show Changes Made to the Claims

1. (Amended twice) A process for cleaning substrates comprising:
cleaning the substrates with an organic solvent in absence of liquid carbon dioxide; and
removing the organic solvent from the substrates using a pressurized fluid solvent;
wherein the organic solvent is of the structural formula:



wherein x , y , and z each is zero or one;
at least one of x , y , and z is one;
 R' is C_jH_{2j+1} wherein j is an integer between one and $(13-3(x+y+z))$, inclusive; and
 R_{1-3} are independently H or CH_3 ;
wherein when the pressurized fluid solvent is liquid carbon dioxide, the liquid carbon dioxide is under a pressure between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

2. (Amended twice) A process for cleaning substrates comprising:
cleaning the substrates with an organic solvent in absence of liquid carbon dioxide; and
removing the organic solvent from the substrates using a pressurized fluid solvent;
wherein the organic solvent is of the structural formula:



wherein x, y, and z each is zero or one;

at least one of x, y, and z is one;

R" is benzyl, phenyl, partially or fully fluorinated benzyl or phenyl, C_jH_{2j+1} , or $C_jH_aF_b$

wherein j is an integer between one and $(13-3(x+y+z))$, inclusive, a and b each is independently an integer between zero and $2j+1$, inclusive, and $a+b=2j+1$;

R_{1-12} are independently $C_mH_nF_p$ or $C_dH_eF_g$ where m is an integer between zero and two, inclusive, n and p are integers between zero and five, inclusive and $n+p=2m+1$, d is an integer between zero and two, inclusive, e and g are integers between zero and five, inclusive, and $e+g=2d+1$; and

R' is O, S, carbonyl or ester;

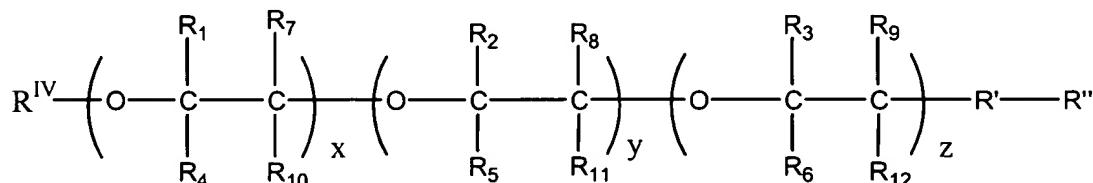
wherein when the pressurized fluid solvent is liquid carbon dioxide, the liquid carbon dioxide is under a pressure between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

33. (Amended twice) A process for cleaning substrates comprising:

cleaning the substrates with an organic solvent in absence of liquid carbon dioxide; and

removing the organic solvent from the substrates using a pressurized fluid solvent;

wherein the organic solvent is of the structural formula:



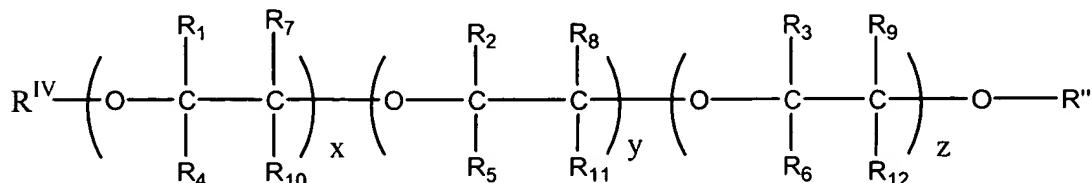
wherein x, y, and z each is zero or one;

at least one of x, y, and z is one;

R" is C_jH_{2j+1} or $C_jH_uF_v$ and R^{IV} is C_kH_{2k+1} or $C_kH_rF_s$ wherein j and k are each an integer between one and $(13-3(x+y+z))$, inclusive, and $j+k$ is an integer between two and $(13-3(x+y+z))$, inclusive, u and v are each an integer between zero and $2j+1$, inclusive, and $u+v=2j+1$, and r and s are each an integer between zero and $2k+1$, inclusive, and $r+s=2k+1$, and if k equals zero, then s equals zero;

R_{1-3} and R_{10-12} are independently $C_mH_nF_p$, where m is an integer between zero and two, inclusive, n and p are integers between zero and five, inclusive and $n+p=2m+1$; R_{4-9} are independently H, F or CH_3 ; and R' is O, S, carbonyl or ester, and if R' is O or S and j equals zero then v equals zero; wherein when the pressurized fluid solvent is liquid carbon dioxide, the liquid carbon dioxide is under a pressure between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

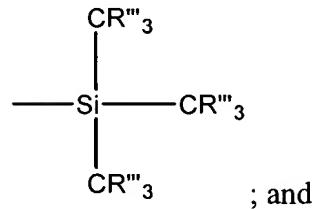
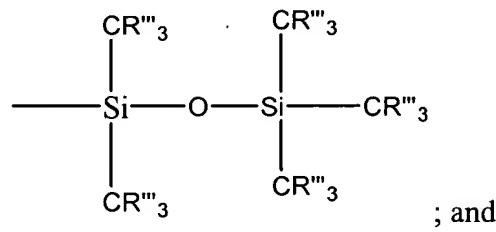
50. (Amended twice) A process for cleaning substrates comprising:
cleaning the substrates with an organic solvent in absence of liquid carbon dioxide; and
removing the organic solvent from the substrates using a pressurized fluid solvent;
wherein the organic solvent is of the structural formula:



at least one of x, y, and z is one;

R" is selected from the group consisting of:

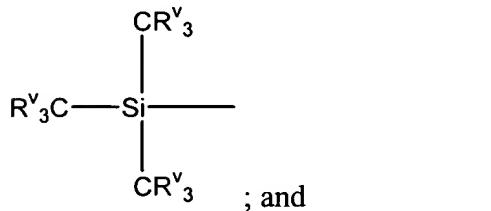
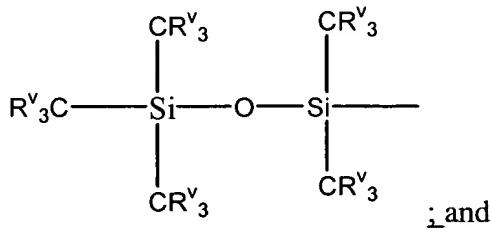
H;



wherein R''' is H, F or combinations of H and F;

R^{IV} is selected from the group consisting of:

H;



wherein R^v is H, F or combinations of H and F; and

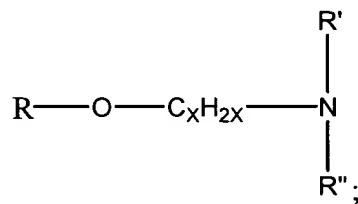
when R" is H or F, R^{IV} is not H or F;

R₁₋₃ are independently H, F, CH₃, CH₂F, CHF₂ or CF₃; and

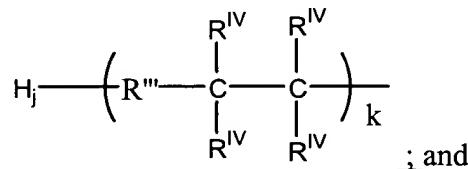
R₄₋₁₂ are independently H or F;

wherein when the pressurized fluid solvent is liquid carbon dioxide, the liquid carbon dioxide is under a pressure between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

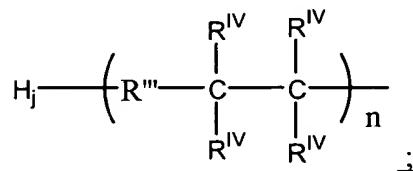
57. (Amended twice) A process for cleaning substrates comprising:
cleaning the substrates with an organic solvent in absence of liquid carbon dioxide; and
removing the organic solvent from the substrates using a pressurized fluid solvent;
wherein the organic solvent is of the structural formula:



wherein R' is



R'' is independently



wherein R''' is O and j is 1 or R''' is N and j is 2;

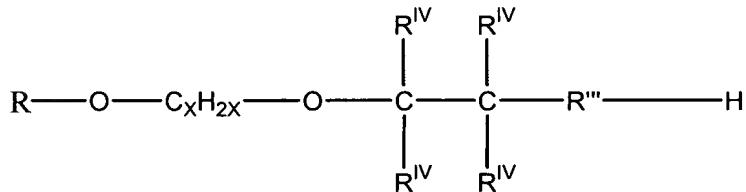
n is an integer between zero and two;

R^{IV} are each independently H, CH_3 or CH_2CH_3 and k is an integer between zero and two inclusive; and

wherein R is C_yH_{2y+1} and y is an integer between one and $(12 - (3k+3n+x))$ inclusive, and x is an integer between one and $(12 - (3k+y))$, inclusive;

wherein when the pressurized fluid solvent is liquid carbon dioxide, the liquid carbon dioxide is under a pressure between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

58. (Amended twice) A process for cleaning substrates comprising:
cleaning the substrates with an organic solvent in absence of liquid carbon dioxide; and
removing the organic solvent from the substrates using a pressurized fluid solvent;
wherein the organic solvent is of the structural formula:



wherein R''' is O or NH;

R^{IV} are each independently H, CH_3 or CH_2CH_3 and k is an integer between zero and two inclusive; and

wherein R is C_yH_{2y+1} and y is an integer between one and $(12 - (3k+x))$ inclusive, and x is an integer between one and $(12 - (3k+y))$, inclusive;

wherein when the pressurized fluid solvent is liquid carbon dioxide, the liquid carbon dioxide is under a pressure between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.